**Before the**
**FEDERAL COMMUNICATIONS COMMISSION**
**Washington, D.C. 20554**

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| In the Matter of | ) | |
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| Replacement of Part 90 by Part 88 to Revise the Private Land Mobile Radio Services and to Modify the Policies Governing Them | ) | |
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| and | ) | **PR DOCKET NO. 92-235** |
| | ) | |
| Examination of Exclusivity and Frequency Assignment Policies of the Private Land Mobile Radio Services | ) | |

# COMMENTS OF MOTOROLA TO THE FURTHER NOTICE OF PROPOSED RULE MAKING

Motorola submits these comments in response to the FCC's Further Notice of Proposed Rule Making in the above captioned proceeding.[1]

## I. Introduction and Summary

Nearly five years ago, the FCC began this proceeding to "refarm" the private land mobile frequency bands below 800 MHz with the purpose of improving spectrum efficiency to meet the increasing demand for private land mobile systems. During this time, the wireless communications industry has witnessed incredible change in the legal, regulatory and technical paradigms that were expected to shape the FCC's decision-making processes. For instance, Congress has redefined the very nature of private and commercial wireless communication services and has replaced many of the traditional spectrum management theories with an economic approach that assigns frequencies to those most willing to pay. Coupled with ever-increasing technical challenges facing mobile

[1] *Report and Order and Further Notice of Proposed Rule Making, (hereinafter Further Notice)* PR Docket No. 92-235, FCC 95-255, released June 23, 1995.

communications, the complexity of the refarming proceeding has grown in substantial measure.

What hasn't changed, however, is the need for industries and governmental agencies to deploy wireless communications systems for their own internal purposes. For the past 70 years, private land mobile radio users have demonstrated the benefits derived from managing and controlling their own radio facilities to support critical operations. Of course, these benefits are not only cost-related. Rather, as Motorola and others have recited over the years, private land mobile radio is a necessity because these users have specialized needs requiring customized solutions that carriers are typically unwilling or unable to provide.

Given the scarcity of spectrum available for land mobile purposes, Motorola strongly believes that this proceeding must focus on the needs of private wireless users who maintain their own internal systems. While service providers clearly play a leading role in the wireless communications industry, the FCC has already taken numerous steps to address their spectrum needs. With the allocation of 140 MHz of spectrum for personal communications services ("PCS") and the development of wide area SMR services at 800 MHz and 900 MHz, the Commission should now turn its attention to the needs of private radio users.

It is with this background that Motorola has reviewed the Further Notice designed to encourage the migration to narrowband technologies in the refarming bands. Through its participation in every meaningful industry forum, Motorola is now convinced that there are not any painless regulatory solutions that achieve the multiple goals of refarming to 1) increase channel capacity, 2) promote more efficient spectrum use, and 3) simplify FCC rules while, at the same time, promoting the needs of existing and future private non-commercial systems. The unavoidable truth is that the transition to the new technical

environment is complicated by the existence of more than 12 million affected radios currently occupying the refarming bands.

Nonetheless, Motorola believes that the FCC can revive a frustrated market with a few simple but aggressive steps. First and foremost, the Commission must establish a date certain where existing users must either convert their existing wide band technologies to 12.5 kHz or equivalent technologies (6.25 kHz technologies at the option of the user) or face reclassification as secondary systems. Second, the FCC should adopt a requirement that all new systems be 12.5 kHz or equivalent capable technologies (6.25 kHz at the option of the user) regardless of their frequency of operation. Finally, the FCC should work with Congress and the user groups to develop a fair spectrum usage fee program that provides incentives for additional improvements in spectrum efficiency. In Motorola's view, instituting these steps will provide for the most efficient transition and ensure that these bands will continue to be used primarily for internal private systems.

After careful analysis, Motorola concludes that most of the alternatives described in the Further Notice are inappropriate mechanisms for the specific frequency bands under consideration. Auctioning overlay licenses will surely shift the focus of the refarming bands away from internal use systems to carrier provided operations and cause great damage to this nation's infrastructure industries. The benefits of auctions would not offset the damage. Also, providing existing users with a form of shared exclusivity on existing channels and allowing the resale of excess capacity is contrary to the fundamental purpose for these frequency bands. The providing exclusive use on a regulated basis would be exceedingly difficult to administer and manage and would impede spectrum access to new users. Motorola believes that users requiring protection for the deployment of advanced technologies should instead rely on the existing coordination process.

After five years of debate, Motorola believes that the time has come for the FCC to lead the private land mobile industry into the 21st century by concluding the refarming proceeding swiftly and decisively. The simplest and surest way to improve the existing quality of service and to provide for new systems is to require users to change out existing 25 kHz equipment in favor of technology operating in 12.5 kHz channels. Further debate on additional incentives can then occur, but this action will allow the industry to better plan the deployment of new technologies.

## II. Refarming Must Meet the Needs of Private Wireless Users.

The FCC began this proceeding to address the increasing demands for private land mobile operations in a limited supply of spectrum. Part of this demand was due to the ever-expanding role that private radio assumed in the wireless communications industry. Services such as SMRs, private carriers, and PCPs all expanded throughout the 1980's and 1990's providing wireless users with a broader and more diverse menu of services from which to choose.

However, those carrier-like operations were not the foundation upon which the private land mobile services were built. Rather, the specialized needs of industry and governmental groups necessitated the construction of internal use wireless communications systems. Railroads traveled where no common carriers existed. Police departments required immediate access to communications networks in crisis situations. Pipeline workers often operate in extreme environmental conditions that would render a typical pocket cellular phone ineffective.

As the Commission well understands, the refarming bands serve a critical role in meeting the internal communications needs of the construction, maintenance and operations of the United States infrastructure including transportation (highways, railroads, transit, airlines and trucking), communications (wireline and wireless telephone, broadcast and cable television) and energy (electric and gas utilities, pipelines and petroleum) as well as

within the manufacturing, agribusiness and services industries. To lose this valuable resource to carrier operations would reduce operational efficiency to the detriment of public safety and international competitiveness. Motorola believes that the FCC should continue to structure these bands for private radio use and to minimize the reliance on carrier operations.

Over the past few years, the FCC has done well to promote third party land mobile service providers with spectrum opportunities. First and foremost, the FCC has allocated 140 MHz of spectrum for broadband and unlicensed PCS operations with licenses to be distributed through the competitive bidding process. In addition, the FCC is in the process of further facilitating wide area SMR services at 800 MHz and 900 MHz. Coupled with the creation of the narrowband PCS service and developments of wide area private carrier paging services, the FCC has fostered a competitive wireless communications marketplace. Motorola has participated fully in each of those proceedings and strongly supports the FCC's actions.

These actions, however, do not adequately support the communications needs of many business and agencies. For obvious economic reasons, carriers are not willing to build additional infrastructure to serve the needs of a few users operating in areas of low population density. Also, carriers are typically unwilling to provide immediate preemptive access to public safety or public service operators.[2] While SMR operators and PCS and cellular systems offer real advantages for many businesses and agencies, carriers prefer to offer a "one size fits all" communications solution that is ineffective for a large portion of private radio users.

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[2] Throughout this proceeding, numerous user organizations have pointed out to the Commission that many industrial radio systems offer a high degree of public safety protection. For example, petroleum companies must have immediate access to communications during an oil spill crisis. Railroad personnel are typically the first to arrive at the scene of a train accident and are often needed to provide emergency medical assistance.

Therefore, in focusing on ways to encourage users to migrate to more efficient technology, Motorola believes that it is important to preserve the fundamental nature of the refarming bands for internal use systems. The alternative of restructuring the bands for carrier operations would result in a critical spectrum shortage for those users that must design and operate their own wireless communications systems.[3] For these reasons, the FCC should reject market based incentives that encourage the proliferation of common carrier services in the refarming bands.

## III. The FCC Must Simplify the Refarming Process.

In this proceeding, the FCC is hoping to encourage existing users to expeditiously change out in excess of 12 million radios and deploy newer, more efficient technologies. This migration, however, must occur within the existing frequency bands, i.e., there is no new spectrum being allocated where users can deploy new systems while maintaining their existing infrastructure during a transition period.[4] This problem of service disruption is compounded by the fact that users will not necessarily achieve any improvement in service until others in the immediate radio environment also convert to narrower technologies. This "Chicken and Egg" disincentive requires that the FCC find some form of inducement for users to change out the existing equipment. Once this occurs, the quality of the band will improve and additional capacity will be created for new systems.

Unfortunately, throughout the long course of this difficult proceeding, Motorola has not discovered any "quick fix" regulatory approach that would easily and painlessly satisfy this goal. This is not for lack of trying since Motorola has participated in every tangible industry effort to develop consensus recommendations for refarming. However,

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[3] In fact, this spectrum shortage is already severe in many major markets. Therefore, in conjunction with increasing spectrum capacity in the refarming bands, Motorola urges the FCC to identify new spectrum for private radio services.

[4] This is in contrast to the FCC's other "refarming" proceeding designed to introduce High Definition Television service where it is proposed to provide terrestrial television broadcasters with a second 6 MHz channel for simultaneous operations.

the multiple goals of refarming -- improving spectrum efficiency, improving grade of service, providing for internal use private systems, and minimizing FCC administrative burdens -- often contradict and impede positive alternatives.

For example, in the FCC's Further Notice, the concept of auctioning exclusive use overlay licenses was identified as a possible incentive to the deployment of more spectrum efficient technology. Auctions would entice those interested in providing common carrier service which, most likely, would not meet the needs of the existing users. Thus, while meeting one narrow goal of refarming, such a plan would fundamentally disrupt communications options for thousands of businesses and government agencies.[5] For this reason, Motorola unequivocally opposes the exclusive use overlay license concept for the refarming bands.

Likewise, another proposed inducement for deploying spectrum efficient technology would provide "shared exclusivity" (which involves protecting ad hoc descriptions of service areas of multiple co-channel users) with the ability to resell excess capacity. In theory, this will entice private radio users to deploy efficient systems with greater capacity in order to resell service to like subscribers.[6] However, most private radio users are not in the business of providing commercial communications services. Rather, they utilize radio as a tool to assist in the day to day performance of their core activities and have little inclination to manage a communications service rendered to other parties on a for-profit basis. Furthermore, this proposal would have little utility on the highly populated Business Radio Service channels where tens and sometimes hundreds of

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[5] Motorola also believes that carrier services and private systems are incompatible sharers of channels and that the FCC will be required to police high levels of interference complaints. This runs contrary to the goal of reducing the FCC's administrative burdens.

[6] Historically, allowing private users to resell excess capacity to "like users" has rarely been successful because private systems are designed to address unique communications requirements that have limited value to other users.

licensees share channels making licensee concurrence a difficult, if not impossible task. Therefore, Motorola does not view the concept of shared exclusivity as a particularly useful tool to encourage migration to new technologies.[7]

The FCC's Further Notice also discussed whether spectrum usage fees or "user fees" that are based on the amount of spectrum a licensee occupied could be used to encourage a migration to more narrow band technology. At the outset, Motorola notes that the FCC lacks statutory authority to institute such a fee program so discussion of their applicability is somewhat premature. Assuming, however, that fee authority could be established, Motorola notes that a properly structured fee program could incentivize users without eliminating the opportunity to establish and maintain a private radio system. Unlike auctions, fees are not necessarily skewed to the benefit of third party service providers and therefore hold some basis as a rational spectrum management tool. Of course, the key is that the fee can not pose a significant financial hardship on users that discourages the use of radio altogether.

In summary, Motorola views the three options proffered by the Commission as ultimately lacking in their ability to foster a post-refarming world sought by the users and the FCC. While the users have consistently indicated that they support refarming, migration to new technology must provide tangible benefits or they can not be justified from either a business or regulatory perspective. As discussed below, Motorola believes that the simplest means of creating additional capacity is to adopt a date certain for the replacement of existing technology in spectrum deficient areas.

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[7] Motorola recognizes that advanced technologies require co-channel interference protection. Motorola favors, however, that such protection be afforded through the frequency coordination process rather than FCC rule. In fact, Motorola is working closely with the Land Mobile Communications Council and the Telecommunications Industries Association to develop the proper tools to facilitate the coordination of new technologies that require different levels of protection. Proceeding in this manner through the coordination process ensures that these bands remain focused for shared private radio use.

## IV. The FCC's Refarming Plan Should be Augmented With a Date Certain Requirement to Replace Existing Wideband Equipment.

At its heart, the Refarming proceeding is about the users and developing a regulatory program that better suits their needs. Instead, we now have a confused market unwilling to invest in system enhancements and upgrades. Thus, the proceeding initiated to improve their quality of communications has instead provided the opposite result. More than anything, what is needed is quick and decisive action to resolve these outstanding issues.

In its initial refarming decision, the FCC decided against a mandated replacement of existing technology and instead ensured the availability of new technologies through the equipment authorization process. Motorola supports that decision and believes that, in most circumstances, traditional business and market incentives will spur users to deploy more efficient technologies and thus achieve the goals of refarming. The main concern, however, is that there is no market incentive that will compel **every** user to replace existing systems. In those environments where users refuse to react to the market forces, the goals of refarming can be frustrated.

To address this fundamental problem, the FCC has solicited comments on whether auctions, channel exclusivity, resale of excess capacity and users fees will provide the proper incentives. As explained above, Motorola views each of the concepts as having deficiencies that limit their appropriateness in these specific frequency bands. Therefore, Motorola believes that the simplest and surest means of ensuring that the Refarming proceeding provides tangible results in all frequency deficient areas is for the FCC to simply mandate a replacement of existing technology at a date certain.[8] Users failing to migrate by that date would be reclassified as secondary users.

[8] It would be most fair to impose such a requirement only to users in frequency deficient areas or, alternatively, in the top markets. Motorola sees no reason to require isolated users

A date certain requirement for replacing 25 kHz equipment as suggested here is supported by the user community. Prior to the adoption of the Refarming Report and Order, a consensus plan was submitted to the FCC by a broad based coalition of user groups and associations recommending that existing technology be replaced by the year 2005. Further, Motorola is aware that additional comments are being filed today by these same user groups suggesting that the FCC revisit this requirement. These user groups understand that a government requirement is the simplest and most efficient means of ensuring that new spectrum is created through refarming.[9]

Coupled with this mandate, the FCC must now require any new user installing a new system in the refarming bands to deploy at least 12.5 kHz technology.[10] To allow new systems to install 25 kHz wideband technologies on the same channels where existing users are contemplating migration options would completely discourage system replacements. Without any existing infrastructure to support, new users/systems are not harmed by this requirement. To ensure fairness, the FCC could defer the effective date of this requirement until one or more manufacturers has type accepted narrowband or very narrowband technologies consistent with the technical standards adopted in this proceeding.

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in rural areas to replace serviceable equipment if their operations are not impeding others from utilizing the spectrum.

[9] In its Petition for Reconsideration of the Refarming Report and Order, APCO asked the Commission to require public safety agencies to be required to change out equipment in the major markets by the year 2005 because, in its view, it would be unlikely for the FCC to apply any market-based incentive on public safety and governmental agencies. Frankly, Motorola is not convinced that any of the proposed market-based incentives would serve to encourage the near term replacement of technology for any private radio user. Therefore, it is appropriate to extend APCO's analysis to all users of the bands.

[10] The Commission is already requiring that new systems operating on "new" channels created by the Refarming's channelization must utilize spectrum efficient technologies. However, new systems operating on the traditional channels in the refarming bands can continue to deploy wideband technologies.

The establishment of a date certain for the replacement of existing technology, coupled with traditional market and business forces that spur users to upgrade and enhance their communications systems, will help enable the FCC to achieve a substantial portion of the ambitious goals for refarming. However, Motorola understands that the FCC is interested in a process that continually encourages the implementation of even greater spectrum efficient technologies. While Motorola questions the need for such further encouragement -- the refarming bands are already examples of highly efficient spectrum use -- Motorola would suggest that further regulatory analysis could proceed while our recommendations and the recommendations of the frequency coordinators are implemented. In this regard, the FCC should focus on whether user fees can be properly tailored to impel the migration to more efficient technology. While Motorola is concerned that fees not be implemented as another federal tax, Motorola can envision their use as a legitimate spectrum management tool.[11] However, the FCC cannot further delay this proceeding simply to obtain fee authority from Congress. It is far too important to allow this industry to move forward so that the most difficult aspects of refarming can be completed before the end of this century.

In this regard, Motorola notes that the success of refarming is highly dependent on the ability of the frequency coordinators to provide authoritative recommendations on channel assignments. Thus, the FCC must ensure that the coordinators have adequate

[11] Motorola limited support for spectrum fees is highly contingent upon their construction. Fees cannot be so high that they serve as a disincentive to the deployment of private wireless systems. Also, it is important to adequately account for the "value" of spectrum in varying regions of the country and to adequately discount such fees in rural environments. Motorola looks forward to working closely with the FCC on this issue.

authority to protect systems from new users based on co-channel and adjacent channel assignment criteria as developed by joint industry committees. Such authority will also serve to reduce burdens on the Agency. Motorola thus supports an expanded role for the coordinators as opposed to codified exclusivity policies based on simplified mileage separations.

## V. Conclusion.

Over the past five years, the FCC and the private land mobile radio industry have debated on how best to improve the efficient utilization of spectrum allocated below 800 MHz for private wireless communications. In large measure, Motorola believes that the Report and Order previously adopted in this proceeding provides the proper framework for facilitating the migration to more efficient technologies. In Motorola's view, the FCC must reduce the residual uncertainty and concern that users now face by deciding this proceeding in a simple and timely fashion. By augmenting its decision in the Report and Order to require existing users in spectrum deficient regions to change out wideband technologies at some specified future date, the FCC will ensure that increase capacity will result by the end of the Refarming proceeding. The clarity of this action will allow businesses, industries and governmental agencies to complete their migration plans in a rational manner.

Respectfully Submitted,

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## CERTIFICATE OF SERVICE

I, Tanya R. Mason, of Motorola Inc. do hereby certify that on this 20th day of November, 1995 a copy of the foregoing "Comments" was sent to each of the following by hand:

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